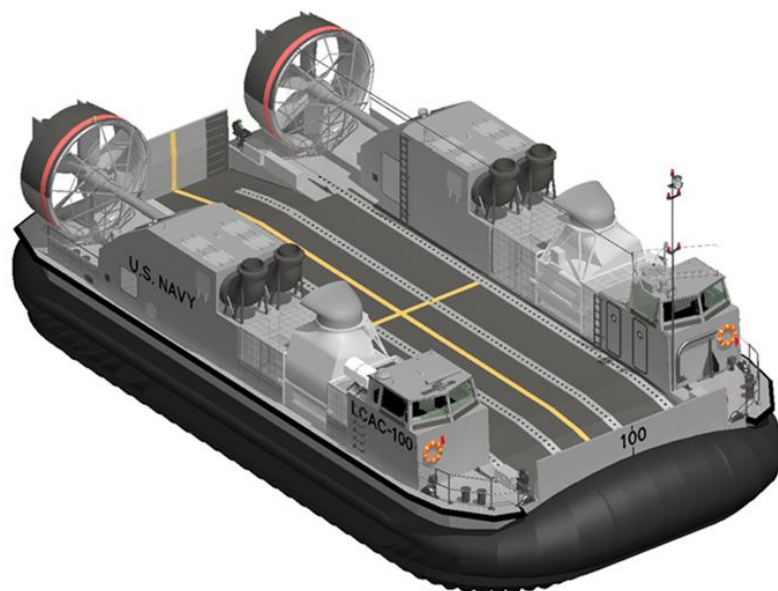




## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-303



### Ship to Shore Connector Amphibious Craft (SSC)

As of FY 2017 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

**Program Name**

Ship to Shore Connector Amphibious Craft (SSC)

**DoD Component**

Navy

## Responsible Office

Mr. Thomas Rivers  
Program Executive Office, Ships  
Amphibious Warfare Program Office  
1333 Isaac Hull Avenue  
Washington, DC 20376-2101

**Phone:** 202-781-0940  
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**Date Assigned:** September 28, 2015

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## References

**SAR Baseline (Development Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 5, 2012

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 5, 2012

## Mission and Description

Ship to Shore Connector (SSC) is the Landing Craft, Air Cushion (LCAC) replacement. It is an Air Cushion Vehicle with the same footprint as the LCAC Service Life Extension Program. The SSC mission is to land surface assault elements in support of Operational Maneuver from the Sea at Over-The-Horizon distances, while operating from amphibious ships and mobile landing platforms. The primary role of SSC is to transport weapon systems, equipment, cargo, and personnel of the assault elements of the Marine Expeditionary Brigades and the Army Brigade Combat Teams during Ship-to-Objective Maneuver and Prepare for Movement operations.

## Executive Summary

The end of 2015 marked the completion of another successful year for the SSC program. The program successfully revalidated the CDD, achieved Milestone C, began its first year of the Production and Development (P&D) phase, held two Integrated Baseline Reviews (IBRs) with the Shipbuilder and established Performance Measurement Baselines (PMBs). The Navy also authorized the option for two additional craft, Landing Craft Air Cushion (LCAC) 102 and LCAC 103, on March 31, 2015.

The Government and Shipbuilder held an IBR for LCAC 101 in February 2015 and for LCACs 102 and 103 in November 2015. Lessons learned from Craft 100 and LCAC 101 IBRs were incorporated as applicable. This improved upon the integrity and reliability of each PMB resulting in its successful assessment. As a result, a mutual understanding of the budget, schedule, and program risks was achieved.

Craft 100 and LCAC 101 moved steadily through the production line in 2015. In November, Craft 100 marked a significant production milestone: hull turnover. The craft's hull is initially constructed upside down for ease of welding and construction, and then 'flipped' to complete its assembly. The turnover is a major transition point as the first craft entered the above deck module integration phase of production. LCAC 101 began fabrication in January and has progressed to the second station in hull construction to complete the buoyancy box structure and initial wiring of equipment. Moreover, all required work packages are complete for Craft 100 and LCAC 101 to sustain production. LCAC 102 and 103 production will begin in FY 2016. A delay in the delivery of aluminum slowed some shop work and Textron experienced challenges with their robotic welder. Despite these issues, Textron was able to implement workarounds to continue construction progress and remains on track to deliver Craft 100 and LCAC 101 within threshold.

Milestone C preparations occurred during the first two quarters of CY 2015. The program was required to complete 12 program-specific exit criteria in order to demonstrate the design is stable and meets requirements based on performance. The program updated the Acquisition Strategy, completed an Operational Assessment, developed mature software capability, re-validated the CDD, proved costs are within the affordability caps, and demonstrated no significant manufacturing risks, complete interoperability, and operational supportability.

In addition to program accomplishments, an Independent Logistics Assessment was conducted which evaluated the adequacy and program health of logistics planning, management, resources, affordability, risk mitigation, and execution of the SSC program. In February 2015, the program received certification of its product support program. The Naval Center for Cost Analysis completed an updated SCP in May 2015 projecting SSC program costs within the APB. The SSC CDD to support the Milestone C decision was revalidated by the Chief of Naval Operations and approved by the JROC on October 8, 2015, with no changes to the KPPs or Key System Attributes that impact design or production. The effort culminated on May 26, 2015 with a successful Milestone C review held with the MDA, the Assistant Secretary of the Navy for Research, Development and Acquisition. The review included an evaluation of key factors that ensured adequate design maturity, production readiness, efficient manufacturing capability and low technical risk. The MDA approved the SSC program to enter the P&D Phase based on demonstrating the low technical risk of the detail design, software development progress and solid reliability growth program. This is a major accomplishment, and paves the way for the production and delivery of 72 new LCACs for our fleet.

Software Release 1 is completed, and Release 2 integration tests and Release 3 development are ongoing.

There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches

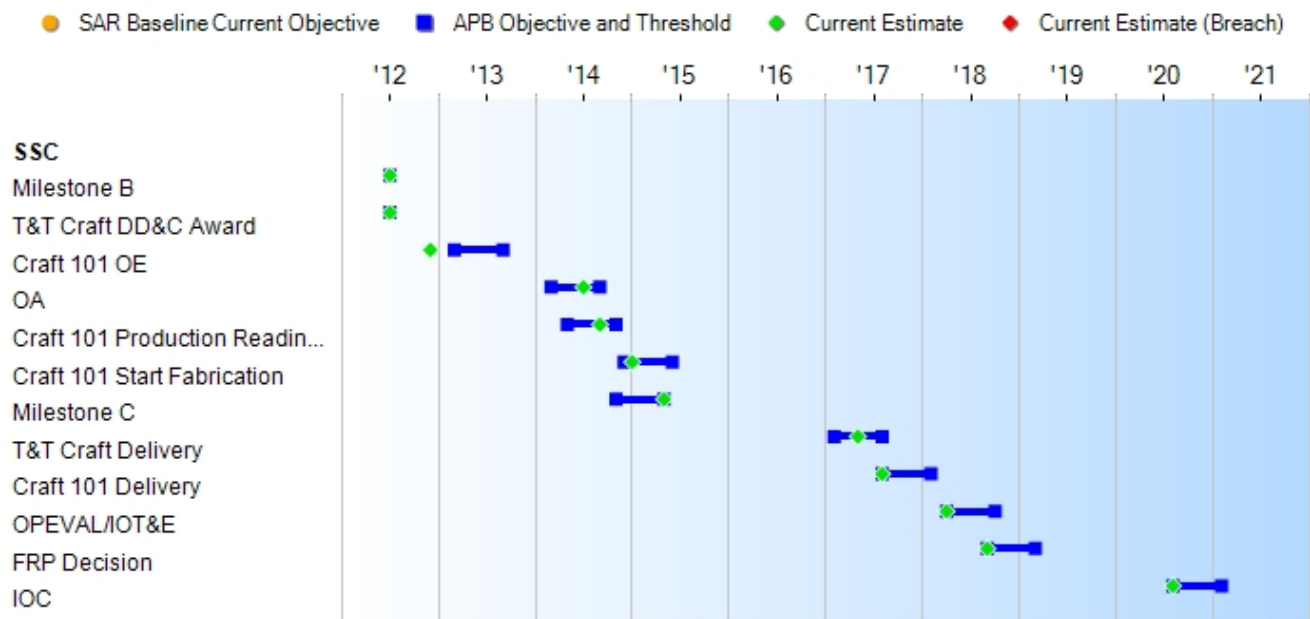
Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches

Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None



## Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Milestone B	Jul 2012	Jul 2012	Jul 2012	Jul 2012
T&T Craft DD&C Award	Jul 2012	Jul 2012	Jul 2012	Jul 2012
Craft 101 OE	Mar 2013	Mar 2013	Sep 2013	Dec 2012
OA	Mar 2014	Mar 2014	Sep 2014	Jul 2014
Craft 101 Production Readiness Review	May 2014	May 2014	Nov 2014	Sep 2014
Craft 101 Start Fabrication	Dec 2014	Dec 2014	Jun 2015	Jan 2015
Milestone C	Nov 2014	Nov 2014	May 2015	May 2015
T&T Craft Delivery	Feb 2017	Feb 2017	Aug 2017	May 2017
Craft 101 Delivery	Aug 2017	Aug 2017	Feb 2018	Aug 2017
OPEVAL/IOT&E	Apr 2018	Apr 2018	Oct 2018	Apr 2018
FRP Decision	Sep 2018	Sep 2018	Mar 2019	Sep 2018
IOC	Aug 2020	Aug 2020	Feb 2021	Aug 2020

### Change Explanations

None

**Acronyms and Abbreviations**

DD&C - Detail Design and Construction

IOT&E - Initial Operational Test and Evaluation

OA - Operational Assessment

OE - Option Exercise

OPEVAL - Operational Evaluation

T&T - Test and Training

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Payload Capacity				
The SSC should be capable of transporting 79 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	The SSC should be capable of transporting 79 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	The SSC should be capable of transporting 74 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	TBD	The SSC should be capable of transporting 74 short tons over the threshold range in the threshold temperature operating range and threshold sea state.
Interoperability				
In addition to the threshold Interoperability, the SSC should be able to operate with allied amphibious ships classes with suitable well decks, to include French Mistral, Japanese Osumi, Korean Dokdo, Spanish Juan Carlos, and Australian Canberra if this interoperability does not alter other interfaces.	In addition to the threshold Interoperability, the SSC should be able to operate with allied amphibious ships classes with suitable well decks, to include French Mistral, Japanese Osumi, Korean Dokdo, Spanish Juan Carlos, and Australian Canberra if this interoperability does not alter other interfaces.	The SSC shall be able to: enter, exit, and embark in well decks of current and programmed USN amphibious ships, to include LHD-1, LPD-17, LSD-41, LSD-49 classes, without ship alterations, while transporting an embarked load 168" high; the off cushion length of the SSC shall permit embarkation of (4) SSCs in LSD-41 class, (2) SSCs in LSD-49 and LPD-17 classes, and (3) SSCs in LHD-1 class; and, enter/exit well decks of amphibious ships while on cushion or in displacement mode (wet well only). SSC shall embark on board the planned MLP, without ship alterations, as designed and built for the LCAC. SSC shall be able to operate with existing ships services, including the planned MLP, in place for the	TBD	The SSC shall be able to: enter, exit, and embark in well decks of current and programmed USN amphibious ships, to include LHD-1, LPD-17, LSD-41, LSD-49 classes, without ship alterations, while transporting an embarked load 168" high; the off cushion length of the SSC shall permit embarkation of (4) SSCs in LSD-41 class, (2) SSCs in LSD-49 and LPD-17 classes, and (3) SSCs in LHD-1 class; and, enter/exit well decks of amphibious ships while on cushion or in displacement mode (wet well only). SSC shall embark on board the planned MLP, without ship alterations, as designed and built for the LCAC. SSC shall be able to operate with existing ships services, including the planned MLP, in place for the LCAC including ship's

		LCAC including ship's power, fueling/defueling stations, compressed air, potable and washdown water, lighting, navigational aids, footprint for spare / consumable pack-up kits, and night vision systems.		power, fueling/ defueling stations, compressed air, potable and washdown water, lighting, navigational aids, footprint for spare / consumable pack-up kits, and night vision systems. The SSC shall be able to enter and exit allied amphibious ships Mistral (French) and Osumi (Japan).
<b>Net-Ready</b>				
The SSC should fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all	The SSC should fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs,	The SSC must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation	TBD	The SSC must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs necessary to meet all

operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.	necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.	guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.		operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.
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### Force Protection

The SSC should be equipped with a remotely operated crew-served weapon system and provide ballistic and fragmentation protection for crew, internally carried embarked forces and critical machinery spaces. Appendix F of the CDD describes the specific ballistic protection requirement.	The SSC should be equipped with a remotely operated crew-served weapon system and provide ballistic and fragmentation protection for crew, internally carried embarked forces and critical machinery spaces. Appendix F of the CDD describes the specific ballistic protection requirement.	The SSC shall provide protection to the crew and internally carried embarked forces from small arms, crew served weapons and fragmentation. Appendix F of the CDD describes the specific ballistic protection requirement. The SSC shall be equipped with mounts capable of accepting current US crew-served weapons to include the M2 .50 Caliber (12.7mm) Machine Gun, MK19 40mm Grenade Machine Gun and M60/M240 Series 7.62mm Light Machine Gun.	TBD	The SSC shall provide protection to the crew and internally carried embarked forces from small arms, crew served weapons and fragmentation. Appendix F of the CDD describes the specific ballistic protection requirement. The SSC shall be equipped with mounts capable of accepting current US crew-served weapons to include the M2 .50 Caliber (12.7mm) Machine Gun, MK19 40mm Grenade Machine Gun and M60/M240 Series 7.62mm Light Machine Gun.
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### Survivability (Sea-Worthiness)

T=O The SSC shall be capable of surviving (remaining afloat) in	T=O The SSC shall be capable of surviving (remaining afloat) in	T=O The SSC shall be capable of surviving (remaining afloat) in	TBD	T=O The SSC shall be capable of surviving (remaining afloat) in
---	---	---	-----	---

displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.	displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.	displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.		displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.
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#### Manpower

The SSC should be fully operable with a crew of no more than three (3).	The SSC should be fully operable with a crew of no more than three (3).	The SSC shall be fully operable, to include conducting on load/offload operations, with a crew of no more than five (5).	TBD	The SSC shall be fully operable, to include conducting on load/offload operations, with a crew of no more than five (5).
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#### Materiel Availability (Am)

The SSC should have a Materiel Availability of 63 percent.	The SSC should have a Materiel Availability of 63 percent.	The SSC shall have a Materiel Availability of 59.5 percent.	TBD	The SSC shall have a Materiel Availability of 61.9 percent.
--	--	---	-----	---

#### Inland Accessibility

T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	TBD	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.
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#### Requirements Reference

Capability Development Document (CDD) dated June 10, 2010

#### Change Explanations

None

**Notes**

The following footnotes apply to Interoperability Threshold Key Performance Parameters:

1/ LSD-41 well deck can embark a fifth craft in a non-tactical capacity without ship services.

2/ LHD-1 Power converter for 3<sup>rd</sup> spot not part of Pack Up Kit footprint.

3/ MLP ship's power for SSC may require alteration or separate pieces of equipment which is not part of Pack Up Kit footprint.

**Acronyms and Abbreviations**

ATO - Authority to Operate

CDD - Capability Development Document

DAA - Designated Approval Authority

DoD IEA - Department of Defense Information Enterprise Architecture

DoDAF - Department of Defense Architecture Framework

GESP - GIG Enterprise Service Profile

GIG - Global Information Grid

IATO - Interim Authority to Operate

IP - Internet Protocol

IT - Information Technology

JTRS - Joint Tactical Radio System

LCAC - Landing Craft Air Cushion

MLP - Mobile Landing Platform

mm - Millimeter

NR-KPP - Net Ready Key Performance Parameter

O - Objective

SAASM - Selective Availability Anti-Spoofing Module

SWH - Significant Wave Height

T - Threshold

TV - Technical View

US - United States

USN - United States Navy

## Track to Budget

### RDT&E

Appn	BA	PE	
Navy	1319	04	0603564N
	<b>Project</b>	<b>Name</b>	
	3127	Preliminary Design and Feasibility Study	(Shared) (Sunk)
	<b>Notes:</b>	Preliminary Design and Feasibility Study/SSC Design	
Navy	1319	05	0604567N
	<b>Project</b>	<b>Name</b>	
	3133	Ship to Shore Connectors Contract Design	(Sunk)
	3137	SSC Construction	(Sunk)
Navy	1319	05	0605220N
	<b>Project</b>	<b>Name</b>	
	3133	Ship to Shore Connectors Contract Design	
	3137	SSC Construction	

### Procurement

Appn	BA	PE	
Navy	1611	05	0204411N
	<b>Line Item</b>	<b>Name</b>	
	5110	Outfitting	(Shared)
Navy	1611	05	0204228N
	<b>Line Item</b>	<b>Name</b>	
	5112	Ship to Shore Connector	
	<b>Notes:</b>	Ship to Shore Connector End Cost	



## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2011 \$M			BY 2011 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	552.7	552.7	608.0	495.4	571.9	571.9	510.7
Procurement	3354.4	3354.4	3689.8	3153.3	4137.5	4137.5	4034.7
Flyaway	--	--	--	3094.2	--	--	3959.1
Recurring	--	--	--	3094.2	--	--	3959.1
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	59.1	--	--	75.6
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	59.1	--	--	75.6
MILCON	18.5	18.5	20.4	13.5	21.7	21.7	16.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	3925.6	3925.6	N/A	3662.2	4731.1	4731.1	4561.4

#### Confidence Level

Confidence Level of cost estimate for current APB: 50%

The estimate to support this program, like most cost estimates, is built upon a product-oriented work breakdown structure based on historical actual cost information to the maximum extent possible, and, most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which we have been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about as likely the estimate will prove too low or too high for the program as described.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	2	2	1
Procurement	71	71	72
Total	73	73	73

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	481.4	7.8	11.1	7.0	1.4	2.0	0.0	0.0	510.7
Procurement	159.6	210.7	128.1	335.9	529.1	641.9	685.2	1344.2	4034.7
MILCON	0.0	0.0	0.0	11.0	0.0	2.5	2.5	0.0	16.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	641.0	218.5	139.2	353.9	530.5	646.4	687.7	1344.2	4561.4
PB 2016 Total	642.5	263.4	282.6	547.0	585.0	528.2	435.2	1412.6	4696.5
Delta	-1.5	-44.9	-143.4	-193.1	-54.5	118.2	252.5	-68.4	-135.1

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	1	0	0	0	0	0	0	0	0	1
Production	0	3	4	2	6	10	12	12	23	72
PB 2017 Total	1	3	4	2	6	10	12	12	23	73
PB 2016 Total	1	3	5	5	9	10	9	8	23	73
Delta	0	0	-1	-3	-3	0	3	4	0	0

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	14.0
2007	--	--	--	--	--	--	13.0
2008	--	--	--	--	--	--	27.0
2009	--	--	--	--	--	--	24.9
2010	--	--	--	--	--	--	33.5
2011	--	--	--	--	--	--	95.5
2012	--	--	--	--	--	--	51.0
2013	--	--	--	--	--	--	112.5
2014	--	--	--	--	--	--	68.4
2015	--	--	--	--	--	--	41.6
2016	--	--	--	--	--	--	7.8
2017	--	--	--	--	--	--	11.1
2018	--	--	--	--	--	--	7.0
2019	--	--	--	--	--	--	1.4
2020	--	--	--	--	--	--	2.0
Subtotal	1	--	--	--	--	--	510.7

Annual Funding								
1319   RDT&E   Research, Development, Test, and Evaluation, Navy								
Fiscal Year	Quantity	BY 2011 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2006	--	--	--	--	--	--	--	15.1
2007	--	--	--	--	--	--	--	13.7
2008	--	--	--	--	--	--	--	27.9
2009	--	--	--	--	--	--	--	25.4
2010	--	--	--	--	--	--	--	33.7
2011	--	--	--	--	--	--	--	93.7
2012	--	--	--	--	--	--	--	49.2
2013	--	--	--	--	--	--	--	107.4
2014	--	--	--	--	--	--	--	64.4
2015	--	--	--	--	--	--	--	38.7
2016	--	--	--	--	--	--	--	7.1
2017	--	--	--	--	--	--	--	10.0
2018	--	--	--	--	--	--	--	6.2
2019	--	--	--	--	--	--	--	1.2
2020	--	--	--	--	--	--	--	1.7
Subtotal	1	--	--	--	--	--	--	495.4

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2019	--	20.0	--	--	20.0	--	20.0
2020	--	--	--	--	--	--	--
2021	--	15.0	--	--	15.0	--	15.0
Subtotal	--	35.0	--	--	35.0	--	35.0

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	BY 2011 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2019	--	17.1	--	--	17.1	--	17.1
2020	--	--	--	--	--	--	--
2021	--	12.3	--	--	12.3	--	12.3
Subtotal	--	29.4	--	--	29.4	--	29.4

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	3	156.7	--	--	156.7	2.9	159.6
2016	4	206.5	--	--	206.5	4.2	210.7
2017	2	125.9	--	--	125.9	2.2	128.1
2018	6	329.5	--	--	329.5	6.4	335.9
2019	10	498.6	--	--	498.6	10.5	509.1
2020	12	629.0	--	--	629.0	12.9	641.9
2021	12	658.0	--	--	658.0	12.2	670.2
2022	10	551.6	--	--	551.6	10.3	561.9
2023	13	708.8	--	--	708.8	14.0	722.8
2024	--	17.0	--	--	17.0	--	17.0
2025	--	11.7	--	--	11.7	--	11.7
2026	--	12.0	--	--	12.0	--	12.0
2027	--	12.4	--	--	12.4	--	12.4
2028	--	6.4	--	--	6.4	--	6.4
Subtotal	72	3924.1	--	--	3924.1	75.6	3999.7

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 2011 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	3	135.4	--	--	135.4	2.5	137.9
2016	4	175.2	--	--	175.2	3.6	178.8
2017	2	104.8	--	--	104.8	1.8	106.6
2018	6	269.0	--	--	269.0	5.2	274.2
2019	10	399.0	--	--	399.0	8.4	407.4
2020	12	493.5	--	--	493.5	10.1	503.6
2021	12	506.1	--	--	506.1	9.4	515.5
2022	10	416.0	--	--	416.0	7.7	423.7
2023	13	524.0	--	--	524.0	10.4	534.4
2024	--	12.3	--	--	12.3	--	12.3
2025	--	8.3	--	--	8.3	--	8.3
2026	--	8.4	--	--	8.4	--	8.4
2027	--	8.5	--	--	8.5	--	8.5
2028	--	4.3	--	--	4.3	--	4.3
Subtotal	72	3064.8	--	--	3064.8	59.1	3123.9



The 2015 Defense Appropriations Act directed the completion of Craft 101 with the Shipbuilding and Conversion, Navy, appropriation.

Cost Quantity Information 1611   Procurement   Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2011 \$M
2015	3	135.4
2016	4	175.2
2017	2	104.8
2018	6	269.0
2019	10	399.0
2020	12	493.5
2021	12	506.1
2022	10	431.5
2023	13	550.3
2024	--	--
2025	--	--
2026	--	--
2027	--	--
2028	--	--
Subtotal	72	3064.8

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps		
Fiscal Year	TY \$M	
	Total Program	
2018		11.0
2019		--
2020		2.5
2021		2.5
Subtotal		16.0

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps	
Fiscal Year	BY 2011 \$M
	Total Program
2018	9.4
2019	--
2020	2.1
2021	2.0
Subtotal	13.5

MILCON reflects changes made to the Department of the Navy Service Cost Position for the Ship to Shore Connector.

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	7/5/2012	7/21/2015
Approved Quantity	13	13
Reference	Milestone B ADM	Milestone C ADM
Start Year	2013	2013
End Year	2021	2021

The Current Total LRIP Quantity is more than 10% of the total production quantity per the Milestone B approved Acquisition Strategy which establishes an initial production base for the system, provide for an orderly increase in the production rate prior to approval for FRP, and meet fleet operational requirements by FY 2020.

**Foreign Military Sales**

None

**Nuclear Costs**

None

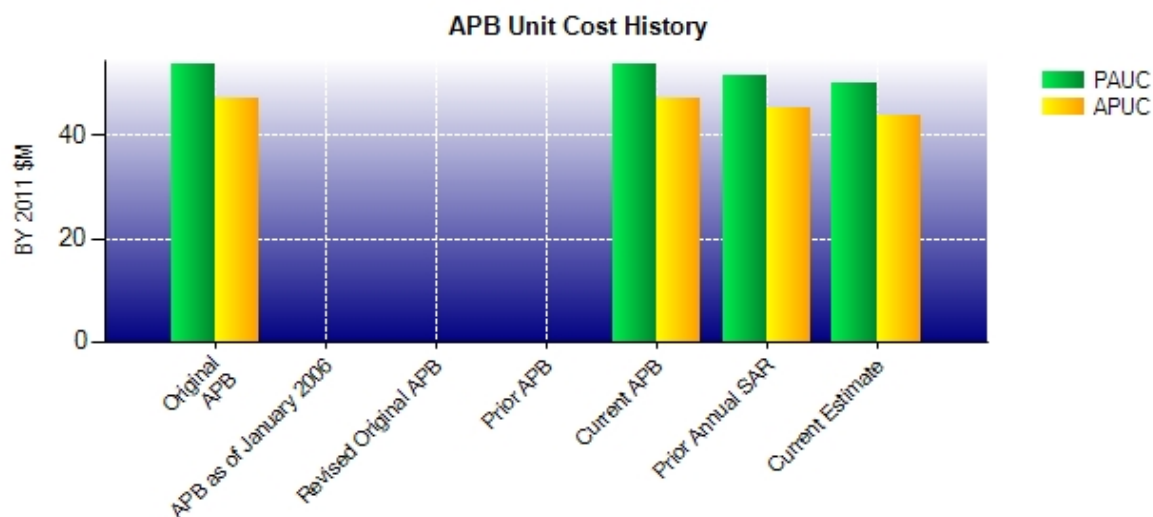
## Unit Cost

### Unit Cost Report

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Current UCR Baseline (Jul 2012 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	3925.6	3662.2	
Quantity	73	73	
Unit Cost	53.775	50.167	-6.71
Average Procurement Unit Cost			
Cost	3354.4	3153.3	
Quantity	71	72	
Unit Cost	47.245	43.796	-7.30

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Original UCR Baseline (Jul 2012 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	3925.6	3662.2	
Quantity	73	73	
Unit Cost	53.775	50.167	-6.71
Average Procurement Unit Cost			
Cost	3354.4	3153.3	
Quantity	71	72	
Unit Cost	47.245	43.796	-7.30

### Unit Cost History



Item	Date	BY 2011 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jul 2012	53.775	47.245	64.810	58.275
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Jul 2012	53.775	47.245	64.810	58.275
Prior Annual SAR	Dec 2014	51.810	45.518	64.336	57.964
Current Estimate	Dec 2015	50.167	43.796	62.485	56.038

### SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
64.810	2.405	-0.020	-0.290	0.000	-4.221	0.000	-0.199	-2.325	62.485

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
58.275	2.454	-0.297	-0.294	0.000	-3.899	0.000	-0.201	-2.237	56.038



SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Jul 2012	N/A	Jul 2012
Milestone C	N/A	Nov 2014	N/A	May 2015
IOC	N/A	Aug 2020	N/A	Aug 2020
Total Cost (TY \$M)	N/A	4731.1	N/A	4561.4
Total Quantity	N/A	73	N/A	73
PAUC	N/A	64.810	N/A	62.485

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	571.9	4137.5	21.7	4731.1
Previous Changes				
Economic	-0.3	+169.4	+0.2	+169.3
Quantity	-38.4	+36.9	--	-1.5
Schedule	--	-35.8	--	-35.8
Engineering	--	--	--	--
Estimating	-31.8	-132.2	-0.2	-164.2
Other	--	--	--	--
Support	--	-2.4	--	-2.4
Subtotal	-70.5	+35.9	--	-34.6
Current Changes				
Economic	-0.9	+7.3	-0.1	+6.3
Quantity	--	--	--	--
Schedule	--	+14.6	--	+14.6
Engineering	--	--	--	--
Estimating	+10.2	-148.5	-5.6	-143.9
Other	--	--	--	--
Support	--	-12.1	--	-12.1
Subtotal	+9.3	-138.7	-5.7	-135.1
Total Changes	-61.2	-102.8	-5.7	-169.7
CE - Cost Variance	510.7	4034.7	16.0	4561.4
CE - Cost & Funding	510.7	4034.7	16.0	4561.4

Summary BY 2011 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	552.7	3354.4	18.5	3925.6
Previous Changes				
Economic	--	--	--	--
Quantity	-35.8	+31.8	--	-4.0
Schedule	--	-3.1	--	-3.1
Engineering	--	--	--	--
Estimating	-30.5	-104.8	-0.1	-135.4
Other	--	--	--	--
Support	--	-1.0	--	-1.0
Subtotal	-66.3	-77.1	-0.1	-143.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+9.0	-113.8	-4.9	-109.7
Other	--	--	--	--
Support	--	-10.2	--	-10.2
Subtotal	+9.0	-124.0	-4.9	-119.9
Total Changes	-57.3	-201.1	-5.0	-263.4
CE - Cost Variance	495.4	3153.3	13.5	3662.2
CE - Cost & Funding	495.4	3153.3	13.5	3662.2

Previous Estimate: December 2014

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.9
Revised estimate aligns to Department of the Navy Milestone C SCP. (Estimating)	+7.7	+8.8
Revised estimate to reflect execution year realignments. (Estimating)	-1.1	-1.2
Revised estimate for Navy Working Capital Fund (NWCF) rate adjustments. (Estimating)	+1.6	+1.8
Adjustment for current and prior escalation. (Estimating)	+0.8	+0.8
RDT&E Subtotal	+9.0	+9.3

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+7.3
Stretch-out of procurement buy profile from FY 2016 thru FY 2024 to align with PB 2017. (Schedule)	0.0	+14.6
Revised estimate to align procurement with Department of the Navy Milestone C SCP and PB 2017 (Ship Construction Navy). (Estimating)	-85.4	-113.7
Revised estimate for NWCF rate adjustments. (Estimating)	-27.1	-34.1
Revised estimate to align with Department of the Navy Milestone C SCP (OPN). (Estimating)	-0.5	+0.3
Adjustment for current and prior escalation. (Estimating)	-0.8	-1.0
Decrease in Initial Spares to align the procurement with the Department of the Navy Milestone C SCP and the PB 2017. (Support)	-10.2	-12.1
Procurement Subtotal	-124.0	-138.7

MILCON	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Revised estimate to align to Department of the Navy Milestone C SCP. (Estimating)	-4.9	-5.6
MILCON Subtotal	-4.9	-5.7

## Contracts

### Contract Identification

**Appropriation:** RDT&E  
**Contract Name:** SSC Detail Design & Construction  
**Contractor:** Textron, Inc  
**Contractor Location:** 19401 Chef Menteur Hwy  
 New Orleans, LA 70129-2565  
**Contract Number:** N00024-12-C-2401  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** July 06, 2012  
**Definitization Date:** July 06, 2012

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
199.9	226.4	1	332.3	373.4	4	367.3	367.3

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising contract options for the construction of three additional Landing Craft Air Cushions (LCAC) and for engineering changes.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/2/2016)	-32.4	-34.9
Previous Cumulative Variances	-15.8	-14.5
Net Change	-16.6	-20.4

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to increased Textron non-recurring Level of Effort labor due to higher than anticipated manufacturing overhead rates and unanticipated efforts in vendors liaison, Earned Value, and Configuration Management. It is also due to increased discrete Engineering labor as a result of increased design complexity in various areas and to increased Textron Manufacturing and Touch labor associated with rework and Robotic welder issues.

The unfavorable net change in the schedule variance is due to delayed American Bureau of Shipbuilding - Naval Vessel Rules Certification & Full Authority Digital Engine Control environmental testing causing Rolls Royce main engine delivery delays and Integrated Logistics Support baseline activities scheduled unrealistically early.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	1	0.00%
Production	0	0	72	0.00%
Total Program Quantity Delivered	0	0	73	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	4561.4	Years Appropriated	11
Expended to Date	359.9	Percent Years Appropriated	47.83%
Percent Expended	7.89%	Appropriated to Date	859.5
Total Funding Years	23	Percent Appropriated	18.84%

The above data is current as of February 09, 2016.

## Operating and Support Cost

### Cost Estimate Details

**Date of Estimate:** May 19, 2015  
**Source of Estimate:** SCP  
**Quantity to Sustain:** 73  
**Unit of Measure:** Craft  
**Service Life per Unit:** 30.00 Years  
**Fiscal Years in Service:** FY 2018 - FY 2057

### Sustainment Strategy

The SSC product support strategy is based on performance driven sustainment and involves utilizing performance-based objectives with traditional data analysis practices to meet program sustainment goals. This strategy is based on implementing an effective supportability analysis program to develop and deliver the logistics products and processes necessary to execute an efficient, affordable sustainment program. Sustainment goals will be applied to both government and contractor support activities to use supportability analysis practices that delivers required craft availability while enabling best-cost improvement opportunities. Performance of the support activities will be measured by their assigned equipment availability as it relates to overall program operational and material availability measures.

### Antecedent Information

LCAC-M is currently used as a financial model and management information tool by the LCAC Program. LCAC-M uses data from the most recent ten years of Operating Target data which funds LCAC Operations, Support, Readiness, Hours of Operation, Sustaining Support, and Continuing System Improvements to predict the O&S cost of a specified level of readiness. The LCAC-M model parameters were adjusted to reflect the specified 150 operating hours per year and manning specified in the CARD for the SSC.

Annual O&S Costs BY2011 \$M		
Cost Element	SSC Average Annual Cost Per Craft	LCAC (Antecedent) Average Annual Cost Per Craft
Unit-Level Manpower	1.524	1.291
Unit Operations	0.454	0.460
Maintenance	1.090	1.357
Sustaining Support	0.463	0.463
Continuing System Improvements	0.264	0.329
Indirect Support	0.819	0.410
Other	0.000	0.000
Total	4.614	4.310

Item	Total O&S Cost \$M			
	SSC			LCAC (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
<b>Base Year</b>	10171.3	11188.4	10106.0	94370.0
<b>Then Year</b>	18058.9	N/A	15657.0	N/A

The total program O&S cost estimate is determined to be \$15,657 TY\$M. This total was de-escalated by the Naval Center for Cost Analysis to arrive at a total O&S Current Estimate of \$10,106.0 BY 2011 \$M.

#### Equation to Translate Annual Cost to Total Cost

Total O&S cost is calculated by multiplying the Average Annual Cost per Craft by the total number of craft by total years of service.  $4.615 \text{ BY } 2011 \text{ \$M} \times 73 \times 30 = \$10,106.0 \text{ BY } 2011 \text{ \$M}$ .

O&S Cost Variance		
Category	BY 2011 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2014 SAR	10154.0	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	-48.0	Two factors changes the overall cost estimate at MS C: 1) Systems Engineering and Program Management support at warfare centers funded. 2) MS C estimate included a policy change to include previously non-DoD cost elements, health benefits for retirees under 65 as well as health care for active duty and active duty families.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-48.0	
Current Estimate	10106.0	

#### Disposal Estimate Details

**Date of Estimate:** May 19, 2015  
**Source of Estimate:** SCP  
**Disposal/Demilitarization Total Cost (BY 2011 \$M):** Total costs for disposal of all Craft are 14.2

The SSC disposal cost estimate is based on the actual disposal costs of the ten LCAC disposed of to date.